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Preface

This LNEE volume contains the papers presented at the International Conference on Mobile and Wireless Technology (ICMWT2015) which was held in Bangkok, Thailand, during June 23–25, 2015.

ICMWT2015 received over 100 paper submissions from various countries. After a rigorous peer-review process, 25 full-length articles were accepted for oral presentation at the conference. This corresponds to an acceptance rate was very low and is intended for maintaining the high standards of the conference proceedings.

ICMWT2015 will provide an excellent international conference for sharing knowledge and results in Mobile and Wireless Technology. The aim of the Conference is to provide a platform to the researchers and practitioners from both academia as well as industry to meet the share cutting-edge development in the field.

The primary goal of the conference is to exchange, share and distribute the latest research and theories from our international community. The conference will be held every year to make it an ideal platform for people to share views and experiences in Mobile and Wireless Technology related fields.

On behalf of the Organizing Committee, we would like to thank Springer for publishing the proceedings of ICMWT2015. We also would like to express our gratitude to the ‘Program Committee and Reviewers’ for providing extra help in the review process. The quality of a refereed volume depends mainly on the expertise and dedication of the reviewers. We are indebted to the Program Committee members for their guidance and coordination in organizing the review process, and to the authors for contributing their research results to the conference.

Our sincere thanks to the Institute of Creative Advanced Technology, Engineering and Science for designing the conference web page and also spending count-less days in preparing the final program in time for printing. We would also like to thank our organization committee for their hard work in sorting our manuscripts from our authors.

We look forward to seeing all of you next year at ICMWT2016 in Korea.

Kuinam J. Kim
Kyonggi University, Korea
Naruemon Wattanapongsakorn
King Mongkut’s University of Technology Thonburi, Thailand

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A Robust On-Demand Routing Protocol for Cognitive Radio Ad Hoc Networks

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Abstract. Cognitive Radio (CR) technology has been introduced to solve the problems of spectrum underutilization and spectrum scarcity caused by improper spectrum management policies. In Cognitive Radio Ad Hoc Networks (CRAHNs), which operate without centralized infrastructure support, data routing encounters various challenges including frequent topology changes, heterogeneous spectrum availability, and intermittent connectivity caused by the activities of Primary Users (PUs). In this paper, a robust on-demand routing protocol for CRAHNs, referred to the Robustness Aware Cognitive Ad-hoc Routing Protocol (RACARP), is proposed with an aim to provide robust paths for data delivery. The Expected Path Delay (EPD) routing metric used for path decision is introduced and applied in the protocol. The metric takes account of the link delay and the effect of packet loss on wireless links. Furthermore, the protocol avoids creating a transmission path that uses PU's channel in PU regions in order to counteract the impact of PU activities which can simply cause communication interruptions. The protocol also jointly exploits path and spectrum diversity in routing process in order to provide multi-path and multi-channel routes for the purpose of fast route recovery. The performance evaluation is conducted through simulation using NS-2 simulator. The simulation results prove that the RACARP protocol achieves better performance in terms of average throughput and average end-to-end delay as compared to the Dual Diversity Cognitive Ad-hoc Routing Protocol (D2CARP).

Keywords: robustness, cognitive radio ad hoc network, routing protocol, expected path delay, route recovery, PU impact avoidance.

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